

tumour), injections of trypsin caused shrinkage and degeneration of the tumours,<sup>1</sup> a not unlikely event considering the active digestive properties of trypsin, and his method is stated to have been carried out with success in the human subject by Prof. Morton in America.

The full report of the work of Prof. Morton will be awaited with interest, but, in the meantime, the premature publication of details cannot be too strongly condemned. It is well known that trypsin has been tried in this country by many without any startling success; it is possible that it may be valuable in certain localised growths, just as radium and the X-rays are in selected cases, but, on the data available, to assert that the conquest of cancer is near at hand is unreasonable, and does infinite mischief to science as well as increasing the suffering of the unfortunate victims of this dire malady by hopes that are destined not to be realised.

With reference to Mr. Beard's experiments on mouse cancer, it is to be noted that this so-called experimental cancer is an implantation of the disease into an animal, and not a cancerous metamorphosis of the animal's own tissues, a thing very different from spontaneous cancer. Chian turpentine, violet leaves, Doyen's serum, and a host of other remedies have all at some time or other been vaunted as specifics for cancer, but none has stood the test of rigorous trial.

In conclusion, an extract from the Bradshaw lecture may be quoted:—

"Surgery must not go in advance of facts, or she will assuredly be overtaken and tripped up, as she has learnt from sad experience. At present it is beyond her power to promise to cure cancer, whether by a cutting operation, by X-rays, by Finsen's light, or by any drug or nostrum injected into the blood, taken internally, or applied locally. Treatment is, unfortunately, not the same thing as cure, and the most effectual treatment for cancer—no matter how small it may be—is still removal by the knife."<sup>2</sup>

#### NUBIAN ANTIQUITIES.

AN important philological discovery is announced from Berlin. Profs. Karl Schmidt and H. Schäfer, who are well known for their work in connection with Coptic literature and Nubian antiquities respectively, have succeeded in making out something of the meaning of some religious documents of the eighth century A.D., written in Coptic characters, but in the Nubian language. The three Nubian dialects of to-day, Kenûs, Mahass, and Danakil, are not written. We have, of course, considerable knowledge of the grammar, &c., of these modern dialects, but of the earlier history of the language but little is known. Hence the interest of Prof. Schmidt's discovery. If the two savants concerned succeed in making out more of the language, we may be able to decipher some of the few Nubian inscriptions written in Coptic characters which still exist.

In the description of the rock-cut grottoes of Gebel Adda, near Abu Simbel, in Murray's "Handbook for Egypt" (1896, p. 977), we find the following passage:—"On the walls are some Coptic inscriptions, and on the S. wall of the adytum is a long text of 14 lines, in what Lepsius calls 'Christian Ethiopic,' of which another example exists on a rock (now partly broken) at the foot of the cliff on which Qasr Ibrim stands. The letters are those of the Coptic alphabet, but the language is unknown." This is the kind of

inscription referred to. Such records are very rare, and we fear that even when read they will prove to be of religious character, and will not throw the "light on the history of the earliest Nubian races" which the sanguine Berlin correspondent of the *Globe* (December 11) anticipates. The discovery referred to is published in the *Abhandlungen* of the Royal Prussian Academy of Sciences under the title "First Fragments of Christian Literature in the Old-Nubian Language."

The Old-Nubian inscriptions of Qasr Ibrim and Gebel Adda are not referred to in Prof. Breasted's recently published report on the "Temples of Lower Nubia" (Chicago, 1906). We hope they have not suffered of late years. With regard to the grottoes of Gebel Adda, we note that on p. 18 of his report Prof. Breasted claims to have discovered a fact that has in reality been known for at least ten years, namely, that the ancient Egyptian Viceroy of Nubia, Paser, who cut a "memorial niche" for himself in this rock, lived in the reign of Eye (Ai) as well as in that of Harmhab (Horemheb). Prof. Breasted errs in his statement that Paser was "heretofore [?] hitherto: heretofore can only refer to matter comprised in Prof. Breasted's previous pages] supposed to have been in office only under Harmhab." He will find the fact noted in the 1896 edition of Murray's "Egypt," probably by that indefatigable collector of Egyptian epigraphic material, Prof. Sayce.

Murray's book is especially useful for rock-tombs and inscriptions, and has far more detail of sites not usually visited by tourists than Baedeker has; but Prof. Breasted has religiously followed his German guide, and so has fallen into Baedeker's error of calling the temple of Serret el-Gharb, south of Gebel Adda, "the temple of Akshah" (p. 17). This mistake was pointed out by Prof. Sayce in the "Recueil de Travaux" for 1895, but still remains uncorrected. Akshah, Aksha, or Akasheh, is many miles away, south of Wadi Halfa; there is a village called *Eshka*, however, not far off, which may be the origin of Baedeker's mistake.

#### NOTES.

THE following presidents of sections have accepted office for the meeting of the British Association to be held at Leicester next year:—A (Mathematics and Physics), Prof. A. E. H. Love, F.R.S.; B (Chemistry), Prof. A. Smithells, F.R.S.; C (Geology), Prof. J. W. Gregory, F.R.S.; D (Zoology), Dr. W. E. Hoyle; E (Geography), Mr. George G. Chisholm; F (Economics), Prof. W. J. Ashley; G (Engineering), Prof. Silvanus P. Thompson, F.R.S.; H (Anthropology), Mr. D. G. Hogarth; I (Physiology), Dr. A. D. Waller, F.R.S.; K (Botany), Prof. J. B. Farmer, F.R.S.; and L (Educational Science), Sir Philip Magnus, M.P.

THE Royal Irish Academy held a very successful conversation in the Academy House on December 4. Their Excellencies the Lord Lieutenant (visitor of the academy) and the Countess of Aberdeen were present, and a large and distinguished company accepted the invitation of the president and council. Some of the rare manuscripts in the possession of the academy were on exhibition, and attracted much attention; and interesting demonstrations were given in connection with recent scientific developments. There were shown by the fisheries branch of the Department of Agriculture and Technical Instruction for Ireland a number of important additions to the marine fauna of Ireland. Some new scientific instruments were

<sup>1</sup> *Brit. Med. Journ.*, 1906, i., p. 140.  
<sup>2</sup> *Brit. Med. Journ.*, 1906, ii., p. 1681.

exhibited and explained, and there was a notable series of large photographs of Vesuvius taken during the recent eruption.

IN the speech of the Secretary for Scotland on December 14, during the debate in committee of the House of Commons on the National Galleries of Scotland Bill, the following passage describes his final proposals regarding the accommodation and grant to the Royal Society of Edinburgh:—"He had now to mention the arrangements proposed for the housing of the Royal Society. For that purpose it was proposed to expend 28,000*l.* of the capital in the hands of the Board of Manufactures. A sum of 25,000*l.* would go to the purchase of a building, and 3000*l.* would cover the expenses of fitting up, re-decorating the new premises, and transferring the library and other effects of the Royal Society from the Royal Institution. The Treasury were giving the Royal Society a grant of not more than 600*l.* a year. At present the Royal Society received a grant of 300*l.* a year, which grant was paid by them as rent for the part of the Royal Institution which they now occupied. In future the Royal Society would be placed in occupation of their new premises, and they would also have the grant of 600*l.* a year for scientific purposes, and would be free from any obligation to pay rent. He thought it would be conceded that the Treasury had been, not extravagant in this matter, but generous."

By permission of the Lord Mayor, the annual meeting of the British Science Guild will be held at the Mansion House on January 28 at 4 p.m. Mr. Haldane, the president of the Guild, and others to be announced later, will speak. The Lord Mayor will preside.

To celebrate the fiftieth anniversary of its foundation the Geographical Society of Vienna held a meeting on December 15 under the presidency of the Archduke Rainer, patron of the society.

THE gold medal offered by the National Geographic Society, Washington, for extraordinary achievements, was presented to Commander Peary by the President of the United States at a banquet on December 15.

THE Berlin correspondent of the *Times* states that on December 14 the German Wireless Telegraphy Company succeeded in establishing wireless telephonic communication between its offices in Berlin and the wireless telegraph station at Nauen, a distance of about twenty-five miles. It is claimed that the apparatus can be adapted to any wireless telegraph installation.

IN the House of Commons on Tuesday a discussion took place on the wireless telegraphy convention signed at the recent conference in Berlin, an account of which was given in *NATURE* of November 15 (p. 59). Sir E. Sassoon moved:—"That, in view of the experimental and undeveloped condition of radio-telegraphy, this House regards with apprehension any engagements hampering the complete freedom of action of the State, and asks His Majesty's Government to grant a Select Committee to inquire into the proposals embodied in the Berlin Convention previous to ratification." The resolution was withdrawn after Mr. Buxton, Postmaster-General, had announced, in the course of a detailed reply to the criticisms passed upon the convention, that a select committee of inquiry would be appointed by the Government at an early period of next session.

ON Friday last, December 14, there was opened in the Alexandra Park, in Manchester, a range of houses erected by the Manchester City Council for the unique collection

of cacti made by the late Mr. Charles Darrah, of Heaton Mersey, and presented to the town of Manchester by his widow and sons. The houses, which were erected at the cost of 2500*l.*, are admirably suited for the purpose, and provide a suitable building for this splendid collection, which comprises about 1200 species and varieties of Cactaceæ, and about 400 specimens of other succulent plants.

A CORRESPONDENT in Osaka sends us a cutting from the *Japan Chronicle* of October 20 in which it is reported that "a remarkable piece of crystal has been discovered on a hill at Masutomi-mura, Kita-Koma district, Yamanashi Prefecture. It is 4½ feet long and 1½ feet thick, weighing more than 10,000 lb." The information is not definite enough to be of much value, but it may be pointed out that a quartz crystal of the size mentioned (4½ feet by 1½ feet) would weigh about 1000 lb., not 10,000 lb. In the collection at the British Museum (Natural History) there is a crystal from Madagascar which is 3 feet long and more than 1 foot thick. A crystal in Milan, 3½ feet in length and 5½ feet in circumference, is estimated to weigh 870 lb.

SPEAKING at the eighth annual dinner of the members of the Medical Graduates' College and Polyclinic, held in London on December 12, Prof. Clifford Allbutt, who presided, said it is quite impossible for teachers, however eminent they may be, to teach undergraduates and post-graduates at the same time, hence the necessity for a post-graduate society of this kind. The science of medicine is living, and the sciences on which medicine was founded are living, and post-graduates must move forward with the rest. Prof. Allbutt suggested that the institution should not rest until it has succeeded in bringing about in this country the establishment of a Ministry of Health.

THE report and balance-sheet for 1906 of the Armstrong College Marine Laboratory, Cullercoats, shows that the sum of 2048*l.* has been received as donations in aid of the scheme to provide a completely equipped laboratory. A marine laboratory is to be erected forthwith at a cost of 3000*l.*, and Mr. Hudleston, the owner, has agreed to let the laboratory to Armstrong College at a yearly rental of 3 per cent. on his outlay. An appeal is made for funds to furnish and equip the laboratory when erected, and these may be sent either to Mr. A. Meek at Armstrong College, Newcastle-upon-Tyne, or to Mr. George Wilkinson, 1 Mosley Street, Newcastle-upon-Tyne.

ON December 6 Mr. Alfred Hands delivered a lecture before the Royal Engineers at Chatham on "The Protection of Buildings from Lightning." He showed the extent of damage by lightning by means of a chart of England and Wales on which the positions and nature of objects damaged during a period of about nine years were indicated by coloured spots. This included 2485 buildings, of which 148 were churches. Mr. Hands showed that it is impossible to protect buildings efficiently by means of set rules; each case has to be studied separately, and the system of protection applied which the complications of metal in and about the structure show to be necessary. Hitherto too much importance has been attached to the form and composition of the conductor, and too little to the fact that its efficiency depends almost entirely on the way in which it is applied, and very little on what it is. As regards the relative value of iron and copper for conductors, so far as the matter concerns conductivity and the dissipation of energy, Mr. Hands holds it to be of such trifling importance that it sinks into insignificance



in comparison with considerations of durability. A lighting conductor is expected to last for a long time, and iron is, unfortunately, too perishable for the purpose. As regards cost, an iron system, if of sufficient size to be fairly lasting, is more costly than an ordinary copper tape one.

A LETTER in the *Times* reports the return of Dr. Stein from his second exploration of Chinese Turkestan. As before, he has combined careful surveys of the Chinese-Indian frontier with archaeological work. His former surveys of the farther side of the Kuen-lun have been largely supplemented, and he has explored more ancient sites, revisiting also the Rawak Stupa, from which he obtained before such important archaeological material. More ancient documents have been secured, and we await with interest his report, and hope that he will bring out another book describing his travels. This, though it will not possess the charm of novelty which distinguished his "Sand-buried Ruins of Khotan" (see *NATURE*, vol. lxx., p. 275), and made it one of the most important archaeological publications of a decade, will still be most interesting as a sequel to his first work, and is sure to contain matter of the greatest importance. We greatly desire to hear more of the mighty Muztagh-ata, "Ice-mountain Father," and of the other Muztagh in the Kuen-lun, with the extraordinary eroded ranges of Yagan-dawan and the impassable gorges of the Yurung-kash, as well as of the ancient cities of Khotan with their sand-buried treasures of former civilisation.

RARE birds observed at Rositten form the subject of notes by Dr. J. Thienemann in the June and October issues of Reichenow's *Ornithol. Monatsberichte*. The most noteworthy is the Indian greenish tree-warbler, *Phylloscopus (Acanthopneuste) viridans*.

THE articles in the November issue of *Naturen* include one by Mr. N. J. Föyn on the *Gjopa* expedition under Amundsen for polar magnetic observation; a second, by Mr. C. F. Kolderup, on the San Francisco earthquake; and a third, by Mr. J. A. Grieg, on animal groups in the Bergen Museum. The latter institution, it appears, has been endeavouring to imitate the *régime* inaugurated by Sir W. H. Flower in our own Natural History Museum, and the article contains reproductions from photographs of groups of birds and mammals amid their natural surroundings, which have been recently set up at Bergen.

A MEMOIR by Prof. F. Toula on the dentition of *Rhinoceros (Ceratorhinus) hundseimensis* forms article 2 of vol. xx. of the *Abhandlungen der k.k. geol. Reichsanstalt*, Vienna. This rhinoceros, which is regarded as a relative of the living *R. sumatrensis*, was first described in 1901 on the evidence of remains from Hundsheim, Altenburg, since which date additional material has been obtained. In describing the dentition in detail, the author refers to that of other European Tertiary species, several of which he splits up into new species and subspecies. The *Rhinoceros etruscus* described by Prof. W. B. Dawkins from the forest-bed of Pakefield he makes, for example, the type of a subspecies, *R. e. pakefieldensis*. In giving the designation *R. megarhinus brachycephala* to a Continental form, Prof. Toula seems to be unaware that, according to the rule adopted by zoologists, this name is preoccupied by *R. mercki brachycephala*, Schröder.

WE have to acknowledge the receipt of vol. v., part iii., and vol. vi., part i., of the Proceedings of the Rhodesia Scientific Association, published at Bulawayo. In addition

to Mr. F. White's presidential address delivered on November 7, 1905, the former contains notes, by Mr. H. Marshall, on birds of the Zambezi valley; geological notes on Rhodesia, by Mr. C. E. Parsons; and petrographical notes on the oldest rocks of South Africa, by Mr. F. P. Mennell. The grasses of Rhodesia, by Mr. C. F. H. Monro, and the Amantabele and other tribes of Matabeleland, by Mr. H. J. Taylor, Chief Native Commissioner, form the chief subjects of the later issue. The "black peril" looms large in Mr. Taylor's paper. The native, according to the author, has recently made rapid strides towards civilisation, and superstition is fast dying out. "His mind is becoming more expansive, and his object is to place himself by his own efforts, if possible, on an equal footing with that of the white man. There is a new era in the life of the native, and we are at the present time faced with the greatest political question of the day; all other questions sink into insignificance in comparison."

THE Journal of the Quekett Microscopical Club for November (ix., No. 59), among others, contains a suggestive paper by Mr. J. Rheinberg on stereoscopic effect and the improvement of the binocular microscope, and a very useful non-technical summary of the Mendelian hypothesis, with bibliography and suggestions for experiments with microscopic organisms.

DR. H. G. GAYLORD, of Buffalo, details some remarkable facts suggestive of contagion among mice and rats arising from tumours believed to be cancerous (*Brit. Med. Journ.*, December 1, p. 1555). A cage was discovered in which upwards of sixty cases of spontaneous tumours occurred among rats and mice kept in it in the course of three years. The fact that the location of the cage was frequently changed, and that the stock was entirely renewed without permanent cessation in the occurrence of tumours, indicate that the cage itself was the source of infection.

DURING the last three or four years the view has been gaining ground that the spirillar microorganisms met with in certain diseases, and known as "spirochætes," are protozoan, and not bacterial, in nature, and Schaudinn stated that they were probably a stage in the development of trypanosomes. Novy and Knapp, however, again reassert the bacterial nature of these spirochætes on the following grounds:—(1) they do not seem to divide longitudinally as do trypanosomes; (2) they multiply much more rapidly than protozoa usually do; (3) unlike trypanosomes, they are unaltered by dialysis against water; (4) they are less affected by heat, and have less avidity for air than trypanosomes; and (5) with spirochætes a well-marked active immunity may be induced on inoculation (*Brit. Med. Journ.*, December 1, p. 1573).

In the Bulletin of the Imperial Botanic Gardens at St. Petersburg, vol. vi., part iv., Mr. N. Busch continues his letters from the Crimea describing the plants collected *en route*. Mr. W. I. Taliew, writing on the flora around Ssergatsch, a town in the Government of Nischny-Novgorod, notes the gradual immigration of *steppe* plants, and another ecological paper is contributed by Mr. B. Fedtschenko on the plant associations of the lake near Borowsk, indicating that it is an outlier of the more northern lakes.

THE importance of forests in connection with the water supply of a country, inasmuch as they regulate the flow of rivers, prevent erosion, and help to conserve moisture, is now generally admitted. This subject is touched upon in

the editorial of the *Indian Forester* (September), and is discussed in a letter from Mr. A. M. Lushington, who draws his arguments from a consideration of the sources of the Cauvery. Mr. Lushington emphasises the necessity of duly conserving the forests at the river sources, and suggests that the help of Government should be invoked to provide the necessary funds, more particularly where the river runs through different States.

Much attention is paid in various parts of India by the forest departments to the planting of avenues along the roadsides. An article describing the trees suitable for the Salem district in Madras, by Mr. F. A. Lodge, is published in the same number of the *Indian Forester*. Figs, the wild mango, the tamarind, and the margosa tree, *Melia azadirachta*, are recommended as a first choice, but a more extensive list is given of trees less generally suitable although adapted to special soils. Cultural directions are added with regard to setting out nurseries, transplanting and pruning.

THE *Bulletin de la Société d'Encouragement* (vol. cviii., No. 9) contains the oration delivered by Mr. Gruner at the funeral of Mr. Huet, the eminent civil engineer, president of the society.

THE report of the judges on the trials of suction gas producers organised by the Royal Agricultural Society has been drawn up by Captain Sankey, and summaries of it are published in the *Engineer* and in *Engineering* of December 14. It forms a valuable contribution to the literature of the subject, and shows conclusively that the suction plant is well adapted for agricultural purposes. Although less manual labour is required than with a steam engine, more intelligence is required on the part of the attendant to ensure the production of gas of good quality. In the eleven plants of which complete figures are given, the fuel consumption per brake horse-power at full load varied between 1.04 lb. and 1.48 lb. The winners of the awards priced their plants at almost the same figure, 11.65l. and 11.77l. per brake horse-power.

RECENT developments in aerial navigation form the subject of an article by Major Baden-Powell in *Knowledge* for December. Commenting on the prevalent view that Santos Dumont's experiments constitute the first case of actual human flight, the author refers to the previous reported records of the Brothers Wilbur and Orville Wright. He also expresses doubt as to how far the recent experiments in Paris have effectively disposed of the stability question. From Major Baden-Powell's article we further learn that experiments with mechanically-propelled balloons are still receiving considerable attention. In particular, the Zeppelin airship has again been making trips, and a speed of thirty miles an hour has been recorded, though it would appear that the estimate was made by theodolite measurements, and further information would therefore have to be placed at the disposal of a reader before any conclusions could be drawn as to the velocity relative to the wind. A new Lebaudy balloon called *La Patrie* has been built for the French Government. Since the appearance of Major Baden-Powell's article it has been reported in the Press that a new explosive has been prepared by the United States Government for use in aeroplane machines constructed by the Brothers Wright.

THE Journal of the Franklin Institute (vol. clxii., No. 5) contains a striking illustration of the historical collection of more than a thousand incandescent lamps, for which the Elliott Cresson gold medal was awarded to Mr. William

J. Hammer, of New York. The collection, made during a period covering more than a quarter of a century, embodies a history that could not have been recorded in words, and could not be reproduced if destroyed. In the same issue Prof. Carl Hering describes the Decker battery, a new form of primary battery for large outputs. It is the usual bichromate cell, the feature of novelty being the construction of the cell and its parts. Prof. A. E. Outerbridge reviews recent progress in metallurgy, dealing specially with high-speed tool steels, ferro-alloys, steel-hardening metals, nickel-vanadium steel alloys, blast-furnace slag cement, aluminium, copper, the great increase in the production of gold, and the declining production of silver.

IN the *Century Magazine* for December is an article by the Hon. W. H. Taft, Secretary of War, U.S.A., explaining why the lock system was adopted for the Panama Canal. This question had been referred to a commission of thirteen of the most experienced ship-canal engineers both in the United States and abroad. The majority of this commission, eight in number, advised a sea-level canal, while the minority, consisting principally of the American engineers, advised a canal with locks at a summit-level of 85 feet above the sea. The final decision of the American Government and Congress has been accorded to the adoption of the lock system. The reason for this may be briefly summarised as follows:—The canal without locks would require a deep cutting, a great deal of which would be rock, through the summit-level at Culebra involving the removal of 250 millions of cubic yards. The waterway through this cutting would only be 150 feet wide and 40 feet deep. It was estimated that it would take sixteen years to complete the work, and that the total cost, including interest on the outlay, would amount to about 63 millions of pounds. The lock canal, on the other hand, is estimated to cost half the above sum, and to occupy only half the time in constructing. The waterway will vary from 45 feet to 75 feet in depth, and the width from 1000 feet over half the length, 500 feet to 800 feet over a third, and for about five miles 200 feet. The locks are to be in three flights, with a rise of 85 feet, or a total lift of 255 feet. Next to the locks, the most important work will be the enormous dam that is to be constructed to hold the water from the Chagres River, which will form a lake covering an area of 118 square miles, and in places eight miles wide, the depth varying from 45 feet to 75 feet. The dam will, in fact, be a small artificial mountain about  $1\frac{1}{2}$  miles long, half a mile wide at the bottom, and 135 feet high, the depth of the impounded water being 85 feet at the dam, the top of which is to be 50 feet above water-level.

THE frequently observed fact that the spontaneous ionisation of the air when measured in leaden vessels appears to be greater than when observed in a chamber of any other metal suggests the presence of some radio-active impurity in ordinary lead. An attempt to identify this constituent is described by Messrs. Elster and Geitel in No. 23 of the *Physikalische Zeitschrift*. The fact that a solution of ordinary lead does not give an emanation proves that the radio-active element is neither radium, actinium, nor radio-thorium. The active constituent remains in solution when the lead is precipitated as chloride, and in this respect resembles radium E and radium F; the fact that it shows an  $\alpha$  radiation exclusively would suggest that it is probably radium F (polonium). Before this point can be settled measurements will have to be made of the range of its  $\alpha$  radiation.



IN a communication to the Royal Academy of Belgium (Bulletin No. 7, p. 452) Prof. Walther Spring shows that the material obtained by decomposing a solution of hydrogen sulphide with sulphur dioxide, and formerly described as  $\delta$  sulphur by Debus, who considered it to be an allotropic form of the element, is in reality a hydrate having the composition  $S_8 \cdot H_2O$ . The hydrate has at the ordinary temperature a vapour pressure much smaller than that characterising most hydrates. When, however, it is exposed for a long period in a vacuum it gradually loses water, a form of sulphur being produced which differs from the known forms in its regenerating the hydrate when left in contact with water. It is interesting to note that the composition of the hydrate corresponds with the molecular weight  $S_8$ , which has been found by physical methods to characterise sulphur in solution.

MR. W. B. CLIVE has published a second edition of "Graphs: or the Graphical Representation of Algebraic Functions," by Messrs. C. H. French and G. Osborn. The book has been expanded, chapters having been added on harder graphs and on the slope of a graph.

A SECOND popular edition of Mr. Oliver Pike's "In Bird-land with Field-glass and Camera" has been published by Mr. T. Fisher Unwin. The first edition of this attractive volume was reviewed in our issue of August 30, 1900 (vol. lxii., p. 417), and it is unnecessary to add anything to the favourable opinion then expressed.

WE have received tickets for Mr. Otho Stuart's revival of *A Midsummer Night's Dream* at the Adelphi Theatre. We are glad to know that the management is presenting this delightful comedy, which, unlike many of the modern plays, is not based upon impurity or inanity, but provides all who see it, whether children or adults, with innocent enjoyment and real delight. An arrangement has been made by which schools and parties of students may receive special terms of admittance, for particulars of which application should be sent to Mr. C. F. Level at the Adelphi Theatre.

A SECOND edition of Mr. J. H. Stansbie's "Introduction to Metallurgical Chemistry for Technical Students" has been published by Mr. Edward Arnold. The book assumes that those who use it are practically interested in the common metals, but have only the knowledge of their properties gained by every-day observation in the workshop or foundry. The scientific study of the subject consequently starts at the beginning. The text is practical in character, and will be useful to the technical students for whom it is intended.

### OUR ASTRONOMICAL COLUMN.

SYSTEMATIC STELLAR MOTIONS.—In a paper submitted to the Royal Astronomical Society Mr. A. S. Eddington discusses the proper motions of the stars contained in the Greenwich-Groombridge catalogue from the point of view that they are not haphazard, but may be considered as belonging to two defined systems.

It has been generally assumed that these proper motions were proper to the individual stars only, but Prof. Kapteyn recently concluded that this assumption was erroneous, and that they might be classified into two "drifts," which are in relative motion, the one to the other. Mr. Eddington's results confirm this theory quantitatively. In each drift the velocities relative to the system of axes of the drift are quite haphazard, but this system of axes has a velocity which is defined as the velocity of that drift.

On analysing the figures obtained for the regions discussed, in order to find the directions of the two drifts in each region, Mr. Eddington found that the stars of drift i. have a common velocity, relative to the sun, away from a point near to R.A. 18h., dec.  $+18^\circ$ , and that the best

point for the apex of drift ii. is about the position R.A. 7h. 30m., dec.  $+58^\circ$ . The velocity of the first drift relative to the sun is much larger than that of the second, the ratio being about 17:5, and from an investigation of the magnitudes of the proper motions there appears to be no appreciable difference in the mean distances of the stars of the two drifts (the *Observatory*, No. 377).

THE SPECTROCOMPARATOR.—An extremely interesting instrument, devised for the measurement of the spectral displacements in the determination of stellar radial velocities, is described by Dr. J. Hartmann in No. 4, vol. xxiv., of the *Astrophysical Journal*.

The usual method employed in measuring the "Doppler" displacement has been to measure the displacement of each individual stellar line in regard to the corresponding line in a terrestrial spectrum, but in Dr. Hartmann's instrument a large number of lines are compared with those of a standard solar spectrum at one time, so that a stellar spectrum rich in lines, which would, by the older method, have taken days to measure, may now be measured in an hour or two. Details, too numerous to mention here, are given in Dr. Hartmann's paper, and are well illustrated by diagrams and worked examples.

MEASUREMENTS OF THE EFFECTIVE WAVE-LENGTHS IN STELLAR SPECTRA.—The position of the "effective" wave-lengths in stellar spectra, that is, the position of the radiations which, in the combined radiations of a complete spectrum, appeal most strongly to the eye, is of great importance in double-star observations. For this reason Dr. H. E. Lau has determined this position in seventy stars, by Prof. Comstock's interference method, and publishes the results in No. 4134 of the *Astronomische Nachrichten*.

The stars which have been examined are arranged in groups according to the Harvard classification, and the distance between the conjugate spectra of the first order is given for each object. This quantity may be converted into wave-lengths by the application of a known factor.

EARLY OBSERVATIONS OF JUPITER'S SIXTH SATELLITE.—On examining the Harvard photographs of Jupiter, Miss Leavitt found the image of the sixth satellite on two taken in 1894 and on nine taken in 1899. These plates were measured, and the results of the measures and their reduction are given and discussed in No. ii., vol. ix., of the *Annals of Harvard College Observatory*. It appears that Miss Leavitt marked and measured this satellite when examining some of these plates on December 10, 1904, but concluded that it was probably an asteroid near to its stationary point.

OBSERVATIONS OF THE AUGUST METEORS.—In No. 4132 of the *Astronomische Nachrichten* Prof. von Konkoly records the results of some meteor observations made at the O-Gyalla Observatory in July and August last. These results show that the maximum of the shower occurred on August 12, on the night of which 158 meteors were observed at O-Gyalla and 251 at the subsidiary station at Nagy-Tagyos. On August 13 the corresponding numbers were 111 and 175.

### GEOLOGY IN THE UNITED STATES AND CANADA.

GLACIALISTS will be interested in the short sketch of the drumlins of south-eastern Wisconsin contained in Bulletin No. 273 of the U.S. Geological Survey.<sup>1</sup> It is a preliminary record of a detailed study of the post-Pleistocene deposits of the district which embraces part of the ground moraine of the Green Bay glacier—in which most of the drumlins lie—and part of that of the Lake Michigan glacier, as well as an earlier Iowan or Illinoian glaciation. The relations of the drumlins to eskers and to the terminal moraines and rock mounds were investigated. The map shows most clearly the arrangement of the drumlins to correspond with the lines of flow of the deploying glacier.

Bulletin No. 265<sup>2</sup> contains a short account of the struc-

<sup>1</sup> Bulletin No. 273. "The Drumlins of South-eastern Wisconsin." (Preliminary Paper.) By W. C. Aldin. (1905.)

<sup>2</sup> Bulletin No. 265. "Geology of the Boulder District of Colorado." By N. M. Fenneman. (1905.)